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AWARENESS OF GYNECOLOGISTS REGARDING OPHTHALMOLOGICAL RISKS OF HORMONE REPLACEMENT THERAPY AND INTERDISCIPLINARY INTERACTION IN OUTPATIENT PRACTICE: A CROSS-SECTIONAL SURVEY

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Introduction. Sex hormones and hormone replacement therapy (HRT) may influence the ocular surface and retinal or optic nerve vascular health, but clinicians' awareness of these potential risks has been insufficiently studied.
Objective. To assess gynecologists' awareness of ophthalmological risks associated with HRT, outpatient practice patterns, interdisciplinary interaction, and educational needs.
Materials and methods. This exploratory cross-sectional online survey included 42 outpatient gynecologists from private clinics (n=19) and public outpatient clinics (n=23). The 23-item author-developed questionnaire underwent expert review and pilot testing. Of 120 invited specialists, 42 provided complete eligible responses (response rate, 35.0%). Continuous data were compared using the Mann–Whitney U test and categorical data using two-sided Fisher's exact test.
Results. Overall, 32/42 respondents (76.2%; 95% CI 61.5–86.5) reported no awareness of ophthalmological risks, 2/42 (4.8%; 95% CI 1.3–15.8) discussed ocular risks during counseling, 31/42 (73.8%) never referred patients to an ophthalmologist, and 39/42 (92.9%) did not request ophthalmological consultation before HRT. Clinical guidance was supported by 34/42 respondents (81.0%). Private-clinic physicians were older and more experienced; no other between-group differences were statistically significant.
Discussion. The findings indicate a substantial self-reported knowledge and practice gap, but the small single-city sample, 35% response rate, self-selection, and nonvalidated knowledge measure limit generalizability. The results should be regarded as hypothesis-generating rather than as an estimate of national practice.
Conclusion. Risk-focused education and clearly defined interdisciplinary referral pathways may improve counseling and clinical vigilance. Larger multicenter studies using a validated instrument are required before universal screening recommendations can be proposed.
Keywords: hormone replacement therapy; menopause; dry eye disease; ophthalmological risks; gynecologists; interdisciplinary interaction; cross-sectional survey.

ГИНЕКОЛОГ ДӘРІГЕРЛЕРДІҢ ГОРМОНАЛДЫ АЛМАСТЫРУ ТЕРАПИЯСЫНЫҢ ОФТАЛЬМОЛОГИЯЛЫҚ ҚАУІПТЕРІ ТУРАЛЫ ХАБАРДАРЛЫҒЫ ЖӘНЕ АМБУЛАТОРИЯЛЫҚ ТӘЖІРИБЕДЕГІ ПӘНАРАЛЫҚ ӨЗАРА ӘРЕКЕТТЕСУ: КӨЛДЕНЕҢ САУАЛНАМАЛЫҚ ЗЕРТТЕУ

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Кіріспе. Жыныстық гормондар мен гормоналды алмастыру терапиясы (ГАТ) көз беткейіне және көру мүшесінің тамырлық құрылымдарына әсер етуі мүмкін, алайда дәрігерлердің осы қатынасты қауіптер туралы хабардарлығы жеткілікті зерттелмеген.
Мақсаты. Гинеколог дәрігерлердің ГАТ-тың офтальмологиялық қауіптері туралы хабардарлығын, амбулаториялық тәжірибесін, пәнаралық өзара әрекеттесуін және білім беру қажеттіліктерін бағалау.
Материалдар мен әдістер. Көлденең электрондық сауалнамаға амбулаториялық буындағы 42 гинеколог дәрігер қатысты: 19-ы жеке клиникалардан және 23-і мемлекеттік емханалардан. 23 сұрақтан тұратын авторлық сауалнама сараптамалық бағалау мен пилоттық тестілеуден өтті. Шақырылған 120 маманның 42-сі іріктеу критерийлеріне сәйкес толық жауап берді (жауап беру деңгейі 35,0%). Сандық деректер Манн–Уитни критерийімен, сапаттық деректер екіжақты Фишердің дәл критерийімен салыстырылды.
Нәтижелер. Көрсетілген офтальмологиялық қауіптер туралы хабардар еместігін 42 респонденттің 32-сі (76,2%; 95% СА 61,5–86,5), пациенттерге кеңес беру кезінде көзге қатысты қауіптерді талқылайтынын 2-еуі (4,8%; 95%

СА 1,3–15,8) хабарлады. Респонденттердің 31-і (73,8%) пациенттерді офтальмологқа ешқашан жібермеген, 39-ы (92,9%) ГАТ алдында офтальмологиялық консультация сұрамаған. Клиникалық ұсынымдарды әзірлеуді 34 дәрігер (81,0%) қолдады. Жеке клиника дәрігерлері жасы үлкен және еңбек өтілі жоғары болды; басқа статистикалық мәнді топаралық айырмашылықтар анықталмады.
Талқылау. Нәтижелер өзін-өзі бағалау бойынша хабардарлық пен тәжірибеде айқын олқылық бар екенін көрсетеді. Алайда бір қаладағы шағын іріктеме, 35% жауап беру деңгейі, қатысушылардың өзіндік іріктелуі және валидтелген білім шкаласының болмауы нәтижелерді жалпылауды шектейді; олар гипотеза қалыптастырушы деректер ретінде қарастырылуы тиіс.
Қорытынды. Нысаналы оқыту және нақты пәнаралық жолдау алгоритмдері кеңес беру сапасы мен клиникалық қырағылықты арттыруы мүмкін. Әмбебап скрининг жөніндегі ұсынымдарды әзірлеу үшін валидтелген құрал қолданылған көпорталықты зерттеулер қажет.
Түйінді сөздер: гормоналды алмастыру терапиясы; менопауза; құрғақ көз ауруы; офтальмологиялық қауіптер; гинекологтар; пәнаралық өзара әрекеттесу; көлденең зерттеу.

ОСВЕДОМЛЕННОСТЬ ВРАЧЕЙ-ГИНЕКОЛОГОВ ОБ ОФТАЛЬМОЛОГИЧЕСКИХ РИСКАХ ЗАМЕСТИТЕЛЬНОЙ ГОРМОНАЛЬНОЙ ТЕРАПИИ И МЕЖДИСЦИПЛИНАРНОЕ ВЗАИМОДЕЙСТВИЕ В АМБУЛАТОРНОЙ ПРАКТИКЕ: ПОПЕРЕЧНОЕ АНКЕТНОЕ ИССЛЕДОВАНИЕ

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Введение. Половые гормоны и заместительная гормональная терапия (ЗГТ) могут влиять на состояние глазной поверхности и сосудистые структуры органа зрения, однако осведомленность врачей об этих потенциальных рисках изучена недостаточно.
Цель. Оценить осведомленность врачей-гинекологов об офтальмологических рисках ЗГТ, особенности амбулаторной практики, междисциплинарное взаимодействие и образовательные потребности.
Материалы и методы. В поперечное электронное анкетирование включены 42 врача-гинеколога амбулаторного звена: 19 специалистов частных клиник и 23 государственных поликлиник. Авторская анкета из 23 вопросов прошла экспертную оценку и пилотирование. Из 120 приглашенных специалистов получено 42 полных ответа, соответствовавших критериям включения (отклик 35,0%). Для сравнения количественных данных использовали критерий Манна–Уитни, категориальных — двусторонний точный критерий Фишера.
Результаты. Об отсутствии осведомленности относительно указанных офтальмологических рисков сообщили 32 из 42 респондентов (76,2%; 95% ДИ 61,5–86,5), обсуждали риски со стороны органа зрения при консультировании 2 из 42 (4,8%; 95% ДИ 1,3–15,8), никогда не направляли пациенток к офтальмологу 31 из 42 (73,8%), а 39 из 42 (92,9%) не запрашивали офтальмологическую консультацию перед ЗГТ. Разработку клинических рекомендаций поддержали 34 из 42 врачей (81,0%). Врачи частных клиник были старше и имели больший стаж; других статистически значимых межгрупповых различий не выявлено.
Обсуждение. Результаты указывают на выраженный дефицит самооцененной осведомленности и соответствующих практик. Вместе с тем небольшая выборка из одного города, отклик 35%, самоотбор участников и отсутствие валидированной шкалы знаний ограничивают обобщаемость результатов; их следует рассматривать как гипотезообразующие.
Заключение. Целевое обучение и четкие междисциплинарные маршруты направления могут повысить качество консультирования и клиническую настороженность. До разработки рекомендаций по универсальному скринингу необходимы многоцентровые исследования с валидированным инструментом.
Ключевые слова: заместительная гормональная терапия; менопауза; болезнь сухого глаза; офтальмологические риски; гинекологи; междисциплинарное взаимодействие; поперечное исследование.

Introduction

In recent years, increasing attention has been paid to the influence of sex hormones and hormone therapy on ocular health. A number of ophthalmological disorders demonstrate sex-related differences in prevalence and clinical course, which may be associated with the effects of estrogens, progesterone, and age-related hormonal changes [1]. Women are more frequently affected by dry eye disease, glaucoma, retinal vascular disorders, and several degenerative eye diseases [1].

This issue is particularly relevant during the peri- and postmenopausal period. Dry eye disease occurs more often in women older than 50 years than in men of a similar age [1–4]. Female sex, aging, menopause, thyroid disorders, autoimmune diseases, contact lens

use, and hormonal changes are recognized risk factors [3,4]. Garcia-Alfaro et al. reported dry eye symptoms in 79% of peri- and postmenopausal women, with higher prevalence after menopause [5]. Beyond discomfort, dry eye disease may impair quality of life, visual function, work productivity, sleep, and psychological well-being [5,6].

Current evidence suggests that hormonal changes may affect the ocular surface, meibomian glands, and tear-film stability [2,7–9]. Estrogens, progesterone, and androgens influence ocular surface tissues, tear production, and tear-film lipid composition [2,7,8]. Studies of hormone therapy and dry eye have produced inconsistent findings [7,10–13]. Some authors reported improved Schirmer test results or symptoms [10–12], whereas others described possible worsening during prolonged hormone exposure [7,13]. Hormonal contraceptive use has also been associated with dry eye disease in women of reproductive age [14]; however, this evidence should not be directly equated with menopausal HRT.

Possible associations between hormone therapy and ocular vascular disorders have also been discussed. Lee et al. reported an association between HRT and nonarteritic anterior ischemic optic neuropathy, with higher risk estimates at longer exposure durations [15]. Other publications have examined retinal vascular occlusion and thrombotic complications in relation to hormonal medications [16–19]. A large study did not identify a significant association between female hormone prescriptions and retinal vascular occlusion [16], whereas higher-dose combined hormonal contraception was associated with retinal vascular occlusion in a different population [18], and isolated case reports have described retinal vascular events during hormone therapy [19]. These heterogeneous data do not establish a uniform causal risk but support clinical awareness and individualized assessment.

Previous research has evaluated women's knowledge of HRT, communication with healthcare professionals, and concerns regarding adverse effects [20,21]. In contrast, gynecologists' awareness specifically regarding potential ophthalmological effects of HRT, related counseling practices, and interaction with ophthalmologists remains insufficiently characterized. The practical relevance of this gap is increased by the common use of HRT and the high background prevalence of ocular symptoms in peri- and postmenopausal women.

The aim of the study was to assess gynecologists' awareness of potential ophthalmological risks associated with HRT, as well as clinical practice patterns, interdisciplinary interaction, and educational needs in outpatient settings.

Materials and Methods

Study design and setting

An exploratory cross-sectional questionnaire-based study was conducted from April 15 to May 5, 2026, among outpatient obstetricians and gynecologists involved in prescribing or managing HRT. The manuscript was structured with reference to the STROBE recommendations for cross-sectional studies and the CHERRIES recommendations for web-based surveys.

Participants and recruitment

The electronic questionnaire was distributed by email to 120 specialists. Inclusion criteria were informed consent, current work in an outpatient setting, and experience in prescribing or managing HRT. Physicians working exclusively in inpatient departments were excluded. All complete responses meeting the eligibility criteria were included. The final sample comprised 42 physicians: 19 from private medical centers and 23 from public outpatient clinics, corresponding to a response rate of 35.0%. Because participation was voluntary and the response rate was limited, the sample was treated as exploratory and not as nationally representative.

Questionnaire development and pilot testing

Data were collected using an anonymous author-developed questionnaire comprising 23 items on demographic characteristics, HRT prescribing, counseling about complications, awareness of potential ophthalmological risks, referral practices, interdisciplinary interaction, organizational barriers, and educational needs. The questionnaire was developed by an obstetrician–gynecologist and an

ophthalmologist. Two independent experts in these specialties reviewed the preliminary version for relevance, completeness, and clarity. Face validity and comprehensibility were evaluated in a pilot focus group of seven practicing gynecologists who were not included in the main sample; minor editorial changes were made after pilot testing.

Most items were closed-ended and permitted either a single response or multiple responses, depending on the question. No composite knowledge or practice score was calculated. Consequently, internal consistency was not estimated; the instrument should be regarded as a content- and face-validated descriptive questionnaire rather than a fully psychometrically validated scale.

Variables and outcomes

The primary descriptive outcomes were self-reported awareness of potential ophthalmological risks of HRT, discussion of ocular risks during patient counseling, assessment of ocular complaints, referral to an ophthalmologist, ophthalmological consultation before HRT, and perceived need for clinical guidance. Secondary variables included age, work experience, frequency of HRT prescribing, workplace type, interdisciplinary interaction, and willingness to participate in educational programs.

Survey administration and potential bias

The questionnaire was administered through Google Forms and distributed electronically. Participation was voluntary, and questionnaires were anonymous. The design may nevertheless be affected by volunteer, nonresponse, recall, and social-desirability bias. No objective test of knowledge or audit of clinical records was performed; therefore, the findings reflect self-reported awareness and practice.

Ethics approval and informed consent

The study protocol was approved by the Local Ethics Committee of Kazakhstan Medical University “Higher School of Public Health”. Electronic informed consent was obtained before participation. No patient-level or directly identifying respondent data were analyzed.

Statistical analysis

Statistical analysis was performed using R software (R Foundation for Statistical Computing, Vienna, Austria). Quantitative variables were summarized as median (Me) and interquartile range (IQR), and categorical variables as counts and percentages. Age was compared using the Mann–Whitney U test. Because of the small sample and sparse contingency tables, categorical variables were compared using two-sided Fisher’s exact test. Exact p-values for categorical comparisons were recalculated from the aggregate counts displayed in Tables 1 and 2. A two-sided p-value <0.05 was considered statistically significant. No adjustment for multiple comparisons was applied; inferential results are therefore interpreted as exploratory.

Results

Participant characteristics and clinical practice

Of 120 invited specialists, 42 complete eligible responses were analyzed (response rate, 35.0%). Participants from private clinics were older than those from public outpatient clinics (Me 45 [IQR 42–49] vs 36 [IQR 33–40] years; p<0.001) and more often had over 10 years of professional experience (78.9% vs 34.8%; p=0.006). Frequency of HRT prescribing, general counseling about HRT complications, assessment of ocular complaints, and referral practices did not differ significantly by workplace (Table 1).

Table 1 - Demographic characteristics and clinical practice patterns by workplace

Indicator	Private clinics (n=19)	Public outpatient clinics (n=23)	p-value
Age, Me (IQR), years	45 (42–49)	36 (33–40)	<0.001*
Work experience			**0.006†**
≤10 years	4 (21.1%)	15 (65.2%)	
>10 years	15 (78.9%)	8 (34.8%)	
Frequency of prescribing HRT			**0.892†**

Indicator	Private clinics (n=19)	Public outpatient clinics (n=23)	p-value
Frequently	13 (68.4%)	14 (60.9%)	
Sometimes	5 (26.3%)	7 (30.4%)	
Rarely	1 (5.3%)	2 (8.7%)	
Informing patients about HRT complications			**0.313†**
Always	16 (84.2%)	22 (95.7%)	
Sometimes	3 (15.8%)	1 (4.3%)	
Never	0	0	
Asking about ocular complaints during HRT			**0.505†**
Regularly	2 (10.5%)	1 (4.3%)	
Sometimes	5 (26.3%)	4 (17.4%)	
Never	12 (63.2%)	18 (78.3%)	
Encountered ocular complaints during HRT			**0.433†**
Yes	5 (26.3%)	3 (13.0%)	
No	14 (73.7%)	20 (87.0%)	
Referral to ophthalmologist			**0.586†**
Regularly	1 (5.3%)	0	
Sometimes	5 (26.3%)	5 (21.7%)	
Never	13 (68.4%)	18 (78.3%)	
Ophthalmological consultation before HRT			**0.581†**
Yes	2 (10.5%)	1 (4.3%)	
No	17 (89.5%)	22 (95.7%)	

** Mann–Whitney U test. † Two-sided Fisher's exact test; p-values recalculated from the displayed aggregate counts.*

Awareness, interdisciplinary interaction, and educational needs

Overall, 32/42 respondents (76.2%; 95% CI 61.5–86.5) reported no awareness of the ophthalmological risks listed in the questionnaire. Only 2/42 (4.8%; 95% CI 1.3–15.8) reported discussing ocular risks during counseling. Thirty-one respondents (73.8%) never referred patients to an ophthalmologist, and 39 (92.9%) did not request ophthalmological consultation before HRT. At the same time, 34/42 respondents (81.0%; 95% CI 66.7–90.0) supported the development of clinical guidance, and 32/42 (76.2%) were willing to participate in interdisciplinary educational programs. No statistically significant differences between workplace groups were identified for these outcomes (Table 2).

Table 2 - Awareness, interdisciplinary interaction, and educational needs regarding potential ophthalmological risks of HRT

Indicator	Private clinics (n=19)	Public outpatient clinics (n=23)	p-value
Awareness of ophthalmological risks of HRT			**0.434†**
Unaware of ocular risks	14 (73.7%)	18 (78.3%)	
Retinal vascular disorders	3 (15.8%)	4 (17.4%)	
Dry eye disease	2 (10.5%)	0	

Indicator	Private clinics (n=19)	Public outpatient clinics (n=23)	p-value
Self-assessment of awareness level			**1.000†**
Very low	1 (5.3%)	2 (8.7%)	
Low	6 (31.6%)	8 (34.8%)	
Moderate	10 (52.6%)	11 (47.8%)	
High	2 (10.5%)	2 (8.7%)	
Very high	0	0	
Mention ocular risks during counseling			**0.199†**
Yes	2 (10.5%)	0	
No	17 (89.5%)	23 (100%)	
Include ocular risks in informed consent			**—‡**
Yes	0	0	
No	19 (100%)	23 (100%)	
Interdisciplinary interaction with ophthalmologists			**0.707†**
Yes	4 (21.1%)	3 (13.0%)	
No	5 (26.3%)	8 (34.8%)	
Difficult to answer	10 (52.6%)	12 (52.2%)	
Need for clinical guidelines			**0.709†**
Yes	16 (84.2%)	18 (78.3%)	
No	3 (15.8%)	5 (21.7%)	
Need for ophthalmological screening before HRT			**0.708†**
Yes	5 (26.3%)	4 (17.4%)	
No	14 (73.7%)	19 (82.6%)	
Willingness to participate in interdisciplinary programs			**1.000†**
Yes	15 (78.9%)	17 (73.9%)	
No	4 (21.1%)	6 (26.1%)	

† Two-sided Fisher's exact test; p-values recalculated from the displayed aggregate counts. ‡ Not estimable because both groups had identical responses and no variation.

Figure 1 summarizes the main awareness and interdisciplinary-practice indicators. The figure is descriptive; it does not imply statistically significant differences between private and public outpatient settings.

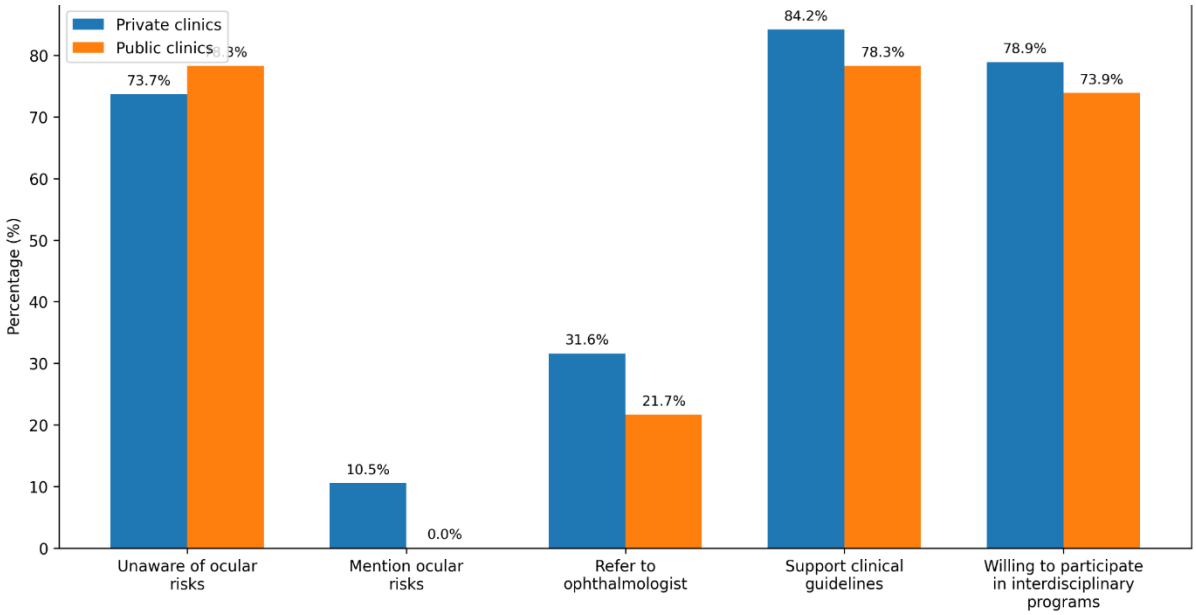

Figure 1 - Awareness and interdisciplinary practice regarding potential ophthalmological risks of HRT among gynecologists

Discussion

This exploratory survey identified a marked gap between frequent HRT-related clinical activity and self-reported attention to potential ophthalmological effects. Most respondents reported no awareness of the ocular risks listed in the questionnaire, rarely asked about ocular symptoms, and did not routinely refer patients for ophthalmological assessment. These findings describe reported knowledge and behavior; they should not be interpreted as a direct measure of clinical competence or as evidence that every patient receiving HRT requires ophthalmological screening.

The results are clinically relevant because dry eye disease is common in peri- and postmenopausal women [1–5] and may substantially affect quality of life, daily functioning, and work productivity [5,6]. Sex hormones influence the ocular surface, meibomian glands, and tear-film homeostasis [2,7–9]. However, evidence regarding the effect of HRT on dry eye is inconsistent: systematic reviews and clinical studies have reported both limited benefit and possible worsening, depending on outcomes, age, formulation, and duration [10–13]. Accordingly, counseling should communicate uncertainty rather than present ocular harm as an established uniform effect of HRT.

Potential vascular outcomes require similar caution. A nationwide cohort study reported an association between HRT and nonarteritic anterior ischemic optic neuropathy [15], whereas another large study did not identify an increased risk of retinal vascular occlusion among women filling prescriptions for female hormone therapy [16]. Evidence from hormonal contraception [18] and a case report in a transgender patient [19] concerns different populations and treatment regimens and cannot be directly generalized to menopausal HRT. These studies nevertheless demonstrate why clinicians should recognize acute visual symptoms and consider individual vascular risk factors.

Previous publications have documented limited HRT knowledge among women and communication barriers in counseling about menopausal hormone therapy [20,21]. Directly comparable surveys of gynecologists' awareness of ophthalmological issues appear scarce. The present study therefore offers preliminary data on a narrowly defined interdisciplinary gap in outpatient practice. Its novelty lies in integrating awareness, counseling, referral behavior, and educational demand within one survey, rather than in establishing the incidence or causality of ocular adverse events.

The high proportion of respondents supporting clinical guidance and interdisciplinary education suggests a practical opportunity. Educational materials could focus on recognition of persistent dry eye symptoms, sudden visual loss, field defects, metamorphopsia, or other warning signs; clear pathways for risk-based referral; and balanced communication about the uncertain and heterogeneous evidence base. The present data do not support mandatory universal ophthalmological screening before HRT, particularly because only a minority of respondents endorsed such screening and the study did not evaluate patient outcomes.

Strengths include multidisciplinary questionnaire development, expert content review, pilot testing, inclusion of private and public outpatient settings, reporting of the response rate, and transparent presentation of absolute counts. The use of a focused survey also generated information on educational needs that may inform future implementation studies.

The study has important limitations. First, the sample was small, recruited in one city, and represented only 35% of invited specialists; volunteer and nonresponse bias may therefore be substantial. Second, knowledge and practice were self-reported and were not verified using an objective knowledge test, clinical records, or patient outcomes. Third, the author-developed questionnaire underwent content and face validation but not test–retest reliability, criterion validation, or broader construct validation. Fourth, operational definitions for some response categories, including “unaware of ocular risks,” require fuller description and the complete questionnaire should accompany a submission as supplementary material. Fifth, the private and public groups differed in age and work experience, and the small sample did not permit adjusted analyses. Sixth, multiple exploratory comparisons were performed without multiplicity correction, sparse cells limited statistical power, and confidence intervals were wide. Finally, the survey did not distinguish HRT formulations, routes, doses, duration, indications, or patient vascular risk profiles. These limitations restrict generalizability and preclude causal inference.

Conclusion

Among 42 outpatient gynecologists who responded to an electronic survey, self-reported awareness of potential ophthalmological effects of HRT and routine interaction with ophthalmologists were limited, while interest in guidance and interdisciplinary education was high. These findings should be interpreted as preliminary because of the small single-city sample, low response rate, and descriptive questionnaire design. Larger multicenter studies using a fully validated instrument and predefined estimates of precision are needed to define the scope of the problem and to develop evidence-based, risk-oriented referral pathways.

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